



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

## NOTICE OF ALLOWANCE AND FEE(S) DUE

20350 7590 12/17/2002

TOWNSEND AND TOWNSEND AND CREW, LLP  
TWO EMBARCADERO CENTER  
EIGHTH FLOOR  
SAN FRANCISCO, CA 94111-3834

EXAMINER

WERNER, BRIAN P

ART UNIT

CLASS-SUBCLASS

2621

382-115000

DATE MAILED: 12/17/2002

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,534	04/11/2001	Robert K. Rowe	1023.1110102	3295

TITLE OF INVENTION: APPARATUS AND METHOD OF BIOMETRIC IDENTIFICATION OR VERIFICATION OF INDIVIDUALS USING OPTICAL SPECTROSCOPY

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1280	\$300	\$1580	03/17/2003

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

## HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.
- B. If the status is changed, pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above and notify the United States Patent and Trademark Office of the change in status, or

If the SMALL ENTITY is shown as NO:

- A. Pay TOTAL FEE(S) DUE shown above, or
- B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.
- ☐ Applicant claims SMALL ENTITY status.  
See 37 CFR 1.27.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to: Mail Box ISSUE FEE  
Commissioner for Patents  
Washington, D.C. 20231  
Fax (703)746-4000**

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

**CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)**

20350 7590 12/17/2002

**TOWNSEND AND TOWNSEND AND CREW, LLP  
TWO EMBARCADERO CENTER  
EIGHTH FLOOR  
SAN FRANCISCO, CA 94111-3834**

**Note:** A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

**Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Box Issue Fee address above, or being facsimile transmitted to the USPTO, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/832,534 04/11/2001 Robert K. Rowe 1023.1110102 3295

**TITLE OF INVENTION:** APPARATUS AND METHOD OF BIOMETRIC IDENTIFICATION OR VERIFICATION OF INDIVIDUALS USING OPTICAL SPECTROSCOPY

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
-------------	--------------	-----------	-----------------	------------------	----------

nonprovisional NO \$1280 \$300 \$1580 03/17/2003

EXAMINER	ART UNIT	CLASS-SUBCLASS
----------	----------	----------------

WERNER, BRIAN P 2621 382-115000

**1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).**

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

**2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.**

1 \_\_\_\_\_  
2 \_\_\_\_\_  
3 \_\_\_\_\_

**3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)**

**PLEASE NOTE:** Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

**(A) NAME OF ASSIGNEE**

**(B) RESIDENCE: (CITY and STATE OR COUNTRY)**

Please check the appropriate assignee category or categories (will not be printed on the patent) ☐ individual ☐ corporation or other private group entity ☐ government

**4a. The following fee(s) are enclosed:**

- ☐ Issue Fee  
☐ Publication Fee  
☐ Advance Order - # of Copies \_\_\_\_\_

**4b. Payment of Fee(s):**

- ☐ A check in the amount of the fee(s) is enclosed.  
☐ Payment by credit card. Form PTO-2038 is attached.  
☐ The Commissioner is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

Commissioner for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature)

(Date)

**NOTE:** The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C. 20231. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.**

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMIT THIS FORM WITH FEE(S)



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,534	04/11/2001	Robert K. Rowe	1023.1110102	3295
20350	7590	12/17/2002	EXAMINER	
TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			WERNER, BRIAN P	
			ART UNIT	PAPER NUMBER
			2621	
DATE MAILED: 12/17/2002				

**Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)**  
(application filed on or after May 29, 2000)

The patent term adjustment to date is 0 days. If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the term adjustment will be 0 days.

If a continued prosecution application (CPA) was filed in the above-identified application, the filing date that determines patent term adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system. (<http://pair.uspto.gov>)

Any questions regarding the patent term extension or adjustment determination should be directed to the Office of Patent Legal Administration at (703)305-1383.

C



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,534	04/11/2001	Robert K. Rowe	1023.1110102	3295
20350	7590	12/17/2002	EXAMINER	
TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834 UNITED STATES			WERNER, BRIAN P	
			ART UNIT	PAPER NUMBER
			2621	

DATE MAILED: 12/17/2002

## Notice of Fee Increase on January 1, 2003

If a reply to a "Notice of Allowance and Fee(s) Due" is filed in the Office on or after January 1, 2003, then the amount due will be higher than that set forth in the "Notice of Allowance and Fee(s) Due" since there will be an increase in fees effective on January 1, 2003. See Revision of Patent and Trademark Fees for Fiscal Year 2003; Final Rule, 67 Fed. Reg. 70847, 70849 (November 27, 2002).

The current fee schedule is accessible from: <http://www.uspto.gov/main/howtofees.htm>.

If the issue fee paid is the amount shown on the "Notice of Allowance and Fee(s) Due," but not the correct amount in view of the fee increase, a "Notice to Pay Balance of Issue Fee" will be mailed to applicant. In order to avoid processing delays associated with mailing of a "Notice to Pay Balance of Issue Fee," if the response to the Notice of Allowance and Fee(s) due form is to be filed on or after January 1, 2003 (or mailed with a certificate of mailing on or after January 1, 2003), the issue fee paid should be the fee that is required at the time the fee is paid. If the issue fee was previously paid, and the response to the "Notice of Allowance and Fee(s) Due" includes a request to apply a previously-paid issue fee to the issue fee now due, then the difference between the issue fee amount at the time the response is filed and the previously paid issue fee should be paid. See Manual of Patent Examining Procedure, Section 1308.01 (Eighth Edition, August 2001).

Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

C

**EXAMINER'S AMENDMENT AND REASONS FOR ALLOWANCE**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 15, 2002 has been entered.

***Response to Amendment***

2. The amendment received on November 15, 2002 has been entered. Claims 1-10, 12-44, 46, 47 and 49-52 were pending following entry of this amendment.

**EXAMINER'S AMENDMENT**

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Patrick M. Boucher (Reg. 44,037) on December 13, 2002.

The application has been amended as follows:

d

Art Unit: 2621

Cancel claims 2, 32, 46 and 47.

Please amend the claims as follows:

1. (Twice Amended) A system for verifying the purported identity of a target individual comprising:

an enrollment database including sub-epidermal tissue optical spectra collected from at least one enrolled person, said enrolled person's sub-epidermal tissue optical spectra having a plurality of measurement wavelengths obtained by applying a spectral band of optical wavelengths to said sub-epidermal tissue;

means for obtaining at least one sub-epidermal tissue optical spectra and purported identity from said target individual, said target individual's sub-epidermal tissue optical spectra having a plurality of measurement wavelengths obtained by applying said spectral band of optical wavelengths to sub-epidermal tissue of said target individual;

means for comparing said target individual sub-epidermal tissue optical spectra and said enrolled person's sub-epidermal tissue optical spectra by selecting for comparison a combination of individual wavelengths of said band emanating from said sub-epidermal tissue that are unique to said person and insensitive to environmental and instrumental effects, said enrolled person's sub-epidermal tissue optical spectra corresponding to the purported identity of the target individual, said comparison providing a measure of the degree of similarity between said target individual sub-epidermal tissue optical spectra and said enrolled person's sub-epidermal tissue optical spectra; and

means for positively verifying said target individual's identity by confirming that said target individual's measure of spectral similarity is at least as similar as an established threshold value.

2. (Twice Amended) The system as recited in claim 1, wherein said means for obtaining said target individual sub-epidermal tissue optical spectra includes a spectrometer.

Art Unit: 2621

<sup>9.</sup>  
~~10.~~ (Three Times Amended) A system for identifying a target individual

comprising:

an enrollment database including sub-epidermal tissue optical spectral data collected from one or more enrolled persons, said enrolled persons' sub-epidermal tissue optical spectra having a plurality of measurement wavelengths obtained by applying a spectral band of optical wavelengths to said sub-epidermal tissue;

means for obtaining at least one sub-epidermal tissue optical spectra from said target individual, wherein said means for obtaining said target individual sub-epidermal tissue optical spectra includes means for measuring optical radiation reflected from sub-epidermal tissue of said target individual, said target individual's sub-epidermal tissue optical spectra having a plurality of measurement wavelengths obtained by applying said spectral band of optical wavelengths to sub-epidermal tissue of said target individual;

means for comparing said target individual sub-epidermal tissue optical spectra and said all enrolled persons' sub-epidermal tissue optical spectra by selecting for comparison a combination of individual wavelengths of said band emanating from said sub-epidermal tissue that are unique to each said person and insensitive to environmental and instrumental effects, said comparison providing a measure of the degree of similarity between said target individual's sub-epidermal tissue optical spectra and each said enrolled person's sub-epidermal tissue optical spectra; and

means for indicating identity as at least one of the said enrolled persons if the corresponding measure of degree of similarity is at least as similar as an established threshold value.

<sup>10.</sup>  
~~12.~~ (Twice Amended) The system as recited in claim <sup>9</sup>10, wherein said means

for obtaining said target individual's sub-epidermal tissue optical spectra includes a spectrometer.

<sup>17.</sup>  
~~19.~~ (Twice Amended) A system for verifying the purported identity of a

target individual comprising:

a computer including an input device and an output device;

an enrollment database including sub-epidermal tissue optical spectra for at least one enrolled person, said enrolled person's sub-epidermal tissue optical spectra having a plurality of measurement wavelengths obtained by applying a band of optical wavelengths to said sub-epidermal tissue;

3 means for obtaining at least one sub-epidermal tissue optical spectrum from said target individual, including an optical radiation source, an optical sampler for projecting optical radiation into the sub-epidermal tissue and for collecting radiation that substantially passed through sub-epidermal sub-epidermal tissue, an optical spectrometer for measuring the sub-epidermal optical intensity over a plurality of wavelengths, wherein said target individual's sub-epidermal tissue optical spectrum has a plurality of measurement wavelengths obtained by applying said spectral band of optical wavelengths to sub-epidermal tissue of said target individual;

means for obtaining said target individual's purported identity; and

a program running in said computer for comparing said target individual sub-epidermal tissue optical spectrum and said enrolled person's sub-epidermal tissue optical spectra corresponding to said target individual's purported identity by selecting for comparison a combination of individual wavelengths of said band emanating from said sub-epidermal tissue that are unique to said person and insensitive to environmental and instrumental effects.

C



Art Unit: 2621

18-

20 (Twice Amended) A system for identifying a target individual

comprising:

a computer including an input device and an output device;

an enrollment database including sub-epidermal tissue optical spectra for at least one enrolled person, said enrolled persons' sub-epidermal tissue optical spectra having a plurality of measurement wavelengths obtained by applying a spectral band of optical wavelengths to said sub-epidermal tissue;

means for obtaining at least one sub-epidermal tissue optical spectrum from said target individual, including an optical radiation source, an optical sampler for projecting optical radiation into the sub-epidermal tissue and for collecting radiation that substantially passed through sub-epidermal sub-epidermal tissue, an optical spectrometer for measuring the sub-epidermal optical intensity over a plurality of wavelengths, wherein said target individual's sub-epidermal tissue optical spectrum has a plurality of measurement wavelengths obtained by applying said spectral band of optical wavelengths to sub-epidermal tissue of said target individual; and

a program running in said computer for comparing said target individual sub-epidermal tissue optical spectrum and all said enrolled persons' sub-epidermal tissue optical spectra by selecting for comparison a combination of individual wavelengths of said band emanating from said sub-epidermal tissue that are unique to each said person and insensitive to environmental and instrumental effects.

C

Art Unit: 2621

19.

21. (Twice Amended) A method for verifying the purported identity of a target individual utilizing an enrollment database including sub-epidermal tissue optical spectra collected from a number of enrolled individuals having known identities, said sub-epidermal tissue optical spectra having a plurality of measurement wavelengths obtained by applying a spectral band of optical wavelengths to said sub-epidermal tissue, comprising the steps of:

obtaining optical target sub-epidermal tissue spectral data from said target individual, said optical target sub-epidermal tissue spectral data having a number of measurement wavelengths obtained by applying said spectral band of optical wavelengths to sub-epidermal tissue of said target individual;

obtaining said purported identity from said target individual;

comparing said optical target sub-epidermal tissue spectra and an enrolled individual's sub-epidermal tissue optical spectra by selecting for comparison a combination of individual wavelengths of said band emanating from said sub-epidermal tissue that are unique to said enrolled individual and insensitive to environmental and instrumental effects, said enrolled individual's sub-epidermal tissue optical spectra corresponding to the purported identity of the target individual, said comparison providing a measure of the degree of similarity between said optical target sub-epidermal tissue spectra and said enrolled individual's sub-epidermal tissue optical spectra; and

positively verifying said target individual's identity by confirming that said target individual's measure of spectral similarity is at least as similar as an established threshold value.

20.

22.

(Amended) The method for verifying the identity of a target individual as recited in claim 21, wherein the method further includes a classification algorithm to perform said comparison between said target individual's optical spectral data and said enrolled individual's optical spectral data.

27.

29.

(Amended) The method for identifying a target individual as recited in claim 21, wherein said sub-epidermal tissue optical spectra include near-ultraviolet wavelengths.

Art Unit: 2621

19 28. (Amended) The method for identifying a target individual as recited in claim 21, wherein said sub-epidermal tissue optical spectra include visible wavelengths.

19 29. (Amended) The method for identifying a target individual as recited in claim 21, wherein said sub-epidermal tissue optical spectra include near-infrared wavelengths.

20 30. (Three Times Amended) A method for identifying a target individual utilizing an enrollment database including sub-epidermal tissue optical spectra collected from a number of enrolled persons, said sub-epidermal tissue optical spectra having a plurality of measurement wavelengths obtained by applying a spectral band of optical wavelengths to said sub-epidermal tissue, comprising the steps of:

obtaining optical target sub-epidermal tissue spectral data from said target individual, said optical target sub-epidermal tissue spectral data having a number of measurement wavelengths and including a substantial spectral contribution from sub-epidermal tissue, wherein said measurement wavelengths are obtained by applying said spectral band of optical wavelengths to sub-epidermal tissue of said target individual;

comparing said optical target sub-epidermal tissue spectral data and said enrolled persons' sub-epidermal tissue optical spectra by selecting for comparison a combination of individual wavelengths of said band emanating from said sub-epidermal tissue that are unique to each said person and insensitive to environmental and instrumental effects, said comparison providing a measure of the degree of similarity between said optical target sub-epidermal tissue spectral data and each of said enrolled person's sub-epidermal tissue optical spectra; and

positively establishing said target individual's identity by confirming that said target individual's measure of spectral similarity is at least as similar to one of the enrolled person's optical spectral data as an established threshold value.

20 31. (Amended) The method for identifying a target individual as recited in claim 33, wherein the method further includes a classification algorithm to perform said comparison between said target individual's optical spectral data and said enrolled persons' optical spectral data.

Art Unit: 2621

C10  
34.  
37. (Amended) The method for identifying a target individual as recited in claim 36, wherein said identification occurs when said comparison of said target optical spectral data and said enrollment spectral data using said classification features is at least as similar as a predetermined measure of similarity for a number of enrolled persons' optical spectral data.

C11  
35.  
38. (Amended) The method for identifying a target individual as recited in claim 33, further comprising an enrollment database with optical spectral data collected from a number of enrolled persons, wherein said number is greater than one.

36.  
40. (Amended) The method for identifying a target individual as recited in claim 33, further comprising an enrollment database with optical spectral data collected from a number of enrolled persons, wherein said number is equal to one.

37.  
42. (Amended) The method for identifying a target individual as recited in claim 33, wherein said sub-epidermal tissue optical spectra include near-ultraviolet wavelengths.

C12  
38.  
43. (Amended) The method for identifying a target individual as recited in claim 33, wherein said sub-epidermal tissue optical spectra include visible wavelengths.

39.  
44. (Amended) The method for identifying a target individual as recited in claim 33, wherein said sub-epidermal tissue optical spectra include near-infrared wavelengths.

C

42.  
49. (Amended) A system for identifying a target individual comprising:  
an enrollment database including sub-epidermal tissue optical spectra collected from at least one enrolled person, each of said enrolled person's sub-epidermal tissue optical spectrum having a plurality of measurement wavelengths obtained by applying a spectral band of optical wavelengths to said sub-epidermal tissue;

C/m  
a spectrometer adapted to obtain at least one sub-epidermal tissue optical spectrum from said target individual by measuring optical radiation reflected from sub-epidermal tissue of said target individual, said target individual's sub-epidermal tissue optical spectrum having a plurality of measurement wavelengths obtained by applying said spectral band of optical wavelengths to sub-epidermal tissue of said target individual;

a comparator adapted to compare said target individual sub-epidermal tissue optical spectrum and each said enrolled person's sub-epidermal tissue optical spectrum by selecting for comparison a combination of individual wavelengths of said band emanating from said sub-epidermal tissue that are unique to each said person and insensitive to environmental and instrumental effects and provide a measure of a degree of similarity between said target individual's sub-epidermal tissue optical spectrum and said enrolled person's sub-epidermal tissue optical spectrum; and

an indicator adapted to identify at least one of said enrolled persons if the corresponding measure of the degree of similarity meets an established threshold value.

---

***Allowable Subject Matter***

4. Claims 1, 3-10, 12-31, 33-44 and 49-52 are allowed. These claims will be renumbered as 1-45.

5. The following is an examiner's statement of reasons for allowance:

Each of the independent claims define a system for biometrically verifying or identifying a target individual by comparing sub-epidermal tissue optical spectra of the

C

Art Unit: 2621

target individual with sub-epidermal tissue optical spectra of a person or persons stored in a database.

The claims distinguish over the prior art by manner in which the sub-epidermal tissue optical spectra are obtained and the manner in which they are compared. Specifically, the spectra are obtained by applying a spectral band of optical wavelengths to the sub-epidermal tissue and measuring a plurality of wavelengths emanating from the tissue, where the comparison is performed by selecting for comparison a combination of individual measured wavelengths of the band emanating from said sub-epidermal tissue that are unique to the person (i.e., the stored spectra) and insensitive to environmental and instrumental effects.

Advantages afforded by applicant's claimed invention include a reduced number of spectral measurements (e.g., as discussed in the specification at pages 29-31) as compared with the prior art (discussed below), in addition to accuracy and repeatability due to the minimization of instrumental and environmental changes (specification page 9, line 10) and through the selection of spectra that is unique to the person whose stored data is being used for comparison (specification page 26, lines 7-18).

The prior art most pertinent to the claimed invention, Wunderman et al. (US 6,122,042 A), was discussed in detail in the previous Office Actions. Wunderman does not teach the above claimed combination of distinguishing limitations. Specifically, Wunderman does not apply a spectral band of optical wavelengths to the sub-epidermal tissue, and Wunderman does not select for comparison a combination of individual



Art Unit: 2621

measured wavelengths of the band emanating from said sub-epidermal tissue that are unique to the person and insensitive to environmental and instrumental effects.

6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

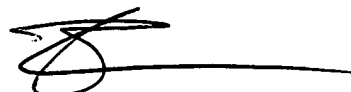
### ***Conclusion***


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian P. Werner whose telephone number is 703-306-3037. The examiner can normally be reached on M-F, 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H. Boudreau can be reached on 703-305-4706. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

Brian Werner  
Patent Examiner  
December 13, 2002

  
**BRIAN WERNER  
PATENT EXAMINER  
ART UNIT 2621**



# Notice of Allowability

Application No.

09/832,534

Examiner

Brian P. Werner

Applicant(s)

ROWE ET AL.

Art Unit

2621

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment received on 11/15/02 and interview on 12/12/02.
2. ☒ The allowed claim(s) is/are 1,3-10,12-31,33-44 and 49-52.
3. ☒ The drawings filed on \_\_\_\_\_ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- \* Certified copies not received: \_\_\_\_\_.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
  - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☒ CORRECTED DRAWINGS must be submitted.
  - (a) ☒ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☒ to Paper No. 9.
  - (b) ☒ including changes required by the proposed drawing correction filed 09 August 2002, which has been approved by the Examiner.
  - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the top margin (not the back) of each sheet. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

- |  |  |
|--|--|
| 1 <input type="checkbox"/> Notice of References Cited (PTO-892)  | 2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                      | 4 <input checked="" type="checkbox"/> Interview Summary (PTO-413), Paper No. <u>20</u> |
| 5 <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. <u>15.</u> | 6 <input checked="" type="checkbox"/> Examiner's Amendment/Comment                     |
| 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material   | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance    |
|  | 9 <input type="checkbox"/> Other   |